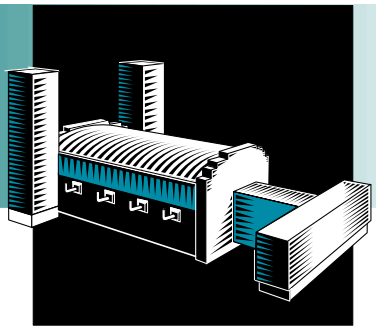
GLASS
Project Fact Sheet



Auto Glass Process Control

Benefits

- Reduced waste and emissions—processing fewer unacceptable glass components will reduce harmful emissions and save an estimated 0.13 tons of waste per year per vehicle
- Reduced process energy consumption (as much as 1.56 million Btu/year per vehicle in oil, gasoline, and electricity)
- Reduced production costs—enhanced process control will improve production efficiency and product yield and quality, reducing costs by about $80/unit

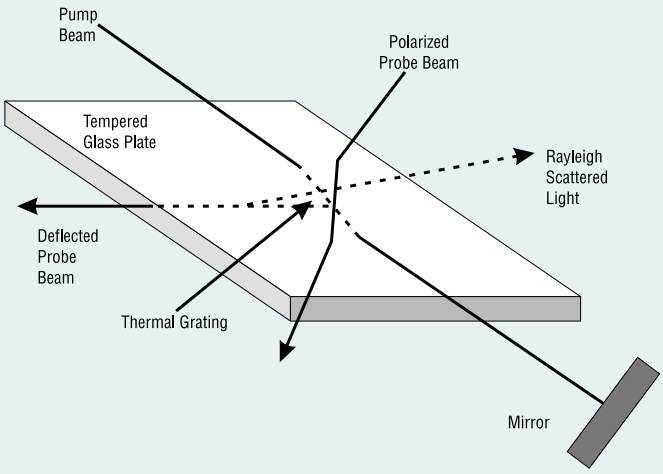
Applications

While this new technology is being developed specifically for the automotive industry, it may be applied to other sectors of the glass industry in which glass must meet structural and strength criteria in stressing environments (e.g., architectural glass, container glass). Additionally, improved modeling capabilities will allow glass manufacturers from any sector to optimize the design of new products with fewer development iterations.

New process control methods will enhance auto glass manufacturing

Glass manufacturing is the greatest per-vehicle energy consumption step in automotive production. It also produces significant amounts of product waste and atmospheric pollutants. To address these issues, Pacific Northwest National Laboratory has teamed with Visteon Glass Systems to develop improved process control methods, including sensors and modeling, for manufacturing formed and tempered automotive glass that will increase process and energy efficiency, improve product quality and yield, and reduce production costs and waste.

Stress Measurement Technique for Tempered Automotive Glass



In-plane stress within a glass sheet can be measured by creating a thermal grating within the glass and subsequently diffracting a probe beam from the grating.

Project Description

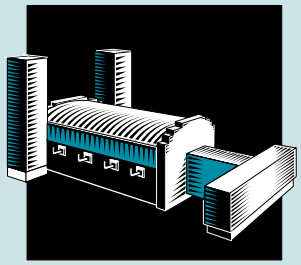
Goal: Develop methods to improve the fabrication process and quality control of formed and tempered glass for the automotive industry.

Specifically, the objectives of the project are as follows:

1. Develop numerical simulation models to optimize the glass forming process and predict fabrication stresses and final shape.
2. Develop on-line, noncontact optical sensors to measure temperature and residual stress.
3. Characterize the thermal and mechanical properties of glass in order to better understand stress distribution in automotive glass.

Progress and Milestones

- New method to measure in-plane stress was successfully demonstrated.
- Glass forming processes have been successfully modeled.
- New optical method for through-thickness temperature measurement successfully demonstrated.



Project Partners

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January 2001